

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

AMENDMENTS TO THE CLAIMS

This listing of the claims will replace all prior versions and listings of the claims in the application.

Claims 1-43 (Canceled)

Claim 44 (Original) A plectrum for a string instrument having a plurality of conductive strings, said plectrum including:

a non-conductive body defining a gripping portion and a plucking portion; and
a conductive tip protruding just beyond an edge of said plucking portion, an outer surface of said tip being sized so as to fleetingly contact a string of said instrument when said string is plucked by said plucking portion, said tip further being capable of operative association with electronic monitoring circuitry adapted to provide a triggering signal each time the tip contacts any one of said strings.

Claim 45 (Original) The plectrum according to claim 44, wherein said tip is electrically connected to a first wire embedded within said body, said first wire being, in turn, electrically connected to a second wire external of said body and extending from a point on said body remote of said plucking portion.

Claim 46 (Original) The plectrum according to claim 44, wherein said tip protrudes from an outer edge of said plucking portion by no more than 1 mm.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 47 (Original) The plectrum according to claim 44, wherein a perimeter length of said tip is no longer than 8 mm.

Claim 48 (Original) The plectrum according to claim 44, wherein a width of said tip is less than a width of said body.

Claim 49 (Original) The plectrum according to claim 45, wherein said body is generally a triangular shape, a region adjacent a first apex of said triangular shape defining said plucking portion, and a region adjacent the other two apexes defining said gripping portion, said tip being disposed at said first apex.

Claim 50 (Original) The plectrum according to claim 49, wherein said second wire extends from, or adjacent to, one of said other apexes.

Claim 51 (Original) The plectrum according to claim 44, wherein an outer edge of said tip is shaped to generally correspond to a shape of said outer edge of said plucking region from which it extends.

Claim 52 (Original) The plectrum according to claim 44, wherein said electronic monitoring circuitry is adapted to detect the initial contact between the tip and the string and to use said initial contact as the basis for the triggering signal.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 53 (Currently Amended) A transmitter/receiver arrangement adapted for use with a plectrum as defined in claim 44, said arrangement including a transmitter having a signal generator electrically connectable to said tip such that, when said tip fleetingly connects with said string during plucking, the transmitter produces a signal which is detectable by receiver circuitry, said receiver circuitry being operatively associated with said electronic monitoring circuitry so as to provide said triggering signal.

Claim 54 (Original) The transmitter/receiver arrangement according to claim 53, wherein said transmitter is mountable to a person playing the instrument, said transmitter being electrically connectable to said plectrum by said second wire.

Claim 55 (Original) The transmitter/receiver arrangement according to claim 54, wherein said transmitter is disposed upon, or housed within, a strap mountable to a wrist of said person.

Claim 56 (Original) The transmitter/receiver arrangement according to claim 55, wherein said strap includes means to house or mount a battery to power said radio frequency signal generator.

Claim 57 (Original) The transmitter/receiver arrangement according to claim 53, wherein said string is electrically connected to an instrument-ground, which is, in turn, electrically connected to said receiver.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 58 (Original) The transmitter/receiver arrangement according to claim 53, wherein said signal generator is a radio frequency signal generator capable of producing a waveform at a carrier frequency, and said receiver circuitry is adapted to compare the carrier frequency with a local oscillator signal so as to only acknowledge a contact between the tip and the string once an intermediate frequency, which is a difference between the carrier frequency and the local oscillator frequency, is detected by the receiver, thereby reducing the likelihood of false triggering due to outside interference from radio frequency noise.

Claim 59 (Original) The transmitter/receiver arrangement according to claim 58, wherein both said carrier frequency and a frequency of said local oscillator signal are within the range 100 KHz to 30 MHz.

Claim 60 (Original) The transmitter/receiver arrangement according to claim 58, wherein said instrument-ground is electrically connected to a receiver-ground, said connection effectively forming an electrical short between said grounds at audio frequencies, and a first tuned receiver between said grounds which is broadly tuned at said carrier frequency.

Claim 61 (Original) The transmitter/receiver arrangement according to claim 59, wherein said connection is an inductor and a capacitor wired in parallel between the instrument-ground and the receiver-ground.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 62 (Original) The transmitter/receiver arrangement according to claim 60, wherein, after passing through said connection, the radio frequency signal is amplified.

Claim 63 (Original) The transmitter/receiver arrangement according to claim 60, wherein said receiver circuitry includes a selective band pass filter tuned at the intermediate frequency.

Claim 64 (Original) The transmitter/receiver arrangement according to claim 62, wherein said local oscillator signal is derived from a clock circuit of a microprocessor or from a frequency crystal.

Claim 65 (Original) The transmitter/receiver arrangement according to claim 53, wherein said electronic monitoring circuitry includes a detector circuit adapted to output an envelope of the intermediate frequency component of the radio frequency signal, said envelope having brief pulses substantially corresponding to the period of time for which the plectrum tip is in contact with the string.

Claim 66 (Original) The transmitter/receiver arrangement according to claim 65, wherein said brief pulses are time-stretched so as to provide a modified signal having time-stretched pulses which would not be missed by a microprocessor.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 67 (Original) The transmitter/receiver arrangement according to claim 66, wherein said electronic monitoring circuitry includes a microprocessor adapted to receive said modified signal and perform an analog-to-digital conversion thereto.

Claim 68 (Original) The transmitter/receiver arrangement according to claim 67, wherein said microprocessor is further adapted to detect positive transients in said modified signal and to generate said triggering signal by correlating each of said positive transients with an initial contact of the plectrum tip with the string.

Claim 69 (Original) The transmitter/receiver arrangement according to claim 53, wherein said receiver circuitry is adapted to store and output a value corresponding to a maximum amplitude of an audio signal from said instrument each time the plectrum contacts the string.

Claim 70 (Original) The transmitter/receiver arrangement according to claim 69, wherein said electronic monitoring circuitry includes a microprocessor adapted to measure the stored value and to output a digital value corresponding to the amplitude.

Claim 71 (Original) A transmitter adapted for use with a plectrum as defined in claim 44, said transmitter having a radio frequency signal generator electrically connectable to said tip such that, when said tip fleetingly connects with said string during plucking, the tip injects a radio frequency signal into the string.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 72 (Original) A receiver adapted for use with the transmitter as defined in claim 71, including receiver circuitry being tuned to said radio frequency so as to detect the radio frequency signal injected into the string, the receiver being operatively associated with said electronic monitoring circuitry so as to provide said triggering signal.

Claim 73 (Original) A signal processing apparatus in combination with a string instrument being plucked by the plectrum defined in claim 44, wherein said signal processing apparatus is adapted to process an audio signal derived from said string instrument, said apparatus including:

a first input to receive said audio signal;

a second input to receive a triggering signal which includes a plurality of triggering pulses, each indicative of a plucking of any of said strings by said plectrum tip;

signal processing circuitry adapted to perform a plurality of different processes, each process modifying the audio signal, said circuitry being electrically connected to said first and second inputs, and wherein said signal processing circuitry is adapted to vary the particular process used to modify the audio signal according to a predefined relationship with said triggering signal; and

an output electrically connected to said signal processing circuitry for outputting a modified audio signal.

Claim 74 (Original) The signal processing apparatus according to claim 73, wherein said predefined relationship is such that the process is varied each time an integral number of triggering pulses are received by the signal processing circuitry.

Claim 75 (Original) The signal processing apparatus according to claim 74, wherein said integral number is one.

Claim 76 (Original) The signal processing apparatus according to claim 73, wherein, during a transition from a first process to a second process, the first process is progressively faded out and the second process is simultaneously progressively faded in.

Claim 77 (Original) The signal processing apparatus according to claim 76, wherein said transition commences upon receipt of a triggering pulse such that each transition is initiated substantially at each moment the tip first contacts the plectrum during plucking.

Claim 78 (Original) The signal processing apparatus according to claim 73, wherein at least one of the operative characteristics of one or more of said processes is variable dependent upon a maximum amplitude of the audio signal each time the plectrum contacts a string.

Claim 79 (Original) The signal processing apparatus according to claim 73, wherein said plectrum communicates with said signal processing apparatus via a transmitter and/or receiver arrangement, said arrangement including a transmitter having a signal generator electrically connectable to said tip such that, when said tip fleetingly connects with said string during plucking, the transmitter produces a signal which is detectable by receiver

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

circuitry, said receiver circuitry being operatively associated with said electronic monitoring circuitry so as to provide said triggering signal.

Claim 80 (Original) The signal processing apparatus according to claim 78, further comprising a transmitter/receiver arrangement,

including a transmitter having a signal generator electrically connectable to said tip such that, when said tip fleetingly connects with said string during plucking, the transmitter produces a signal which is detectable by receiver circuitry, said receiver circuitry being operatively associated with said electronic monitoring circuitry so as to provide said triggering signal;

wherein said receiver circuitry is adapted to store and output a value corresponding to a maximum amplitude of an audio signal from said instrument each time the plectrum contacts the string; and

said electronic monitoring circuitry includes a microprocessor adapted to measure the stored value and to output a digital value corresponding to the amplitude,

wherein the signal processing apparatus includes a third input to receive said digital value, said third input being adapted to feed said value to the signal processing circuitry.

Claim 81 (Original) The signal processing apparatus according to claim 80, wherein the second and third inputs comprise a single input which is adapted to receive and decode an information stream having information relating to both the triggering and the maximum amplitude.

Claim 82 (New) A transmitter/receiver arrangement adapted for use with a plectrum, said arrangement including a transmitter having a signal generator electrically connectable to a tip of the plectrum such that, when said tip fleetingly connects with a string of a string instrument during plucking, the transmitter produces a signal which is detectable by receiver circuitry, said receiver circuitry being operatively associated with electronic monitoring circuitry so as to provide a triggering signal, wherein said signal generator is a radio frequency signal generator capable of producing a waveform at a carrier frequency, and said receiver circuitry is adapted to compare the carrier frequency with a local oscillator signal so as to only acknowledge a contact between the tip and the string once an intermediate frequency, which is a difference between the carrier frequency and the local oscillator frequency, is detected by the receiver, thereby reducing the likelihood of false triggering due to outside interference from radio frequency noise.

Claim 83 (New) The transmitter/receiver arrangement according to claim 82, wherein both said carrier frequency and a frequency of said local oscillator signal are within the range 100 KHz to 30 MHz.

Claim 84 (New) The transmitter/receiver arrangement according to claim 82, wherein said instrument-ground is electrically connected to a receiver-ground, said connection effectively forming an electrical short between said grounds at audio frequencies, and a first tuned receiver between said grounds which is broadly tuned at said carrier frequency.

Application No. 10/019,984
Paper Dated February 6, 2004
Reply to USPTO Correspondence of November 6, 2003
Attorney Docket No. 2920-012194

Claim 85 (New) The transmitter/receiver arrangement according to claim 83, wherein said connection is an inductor and a capacitor wired in parallel between the instrument-ground and the receiver-ground.

Claim 86 (New) The transmitter/receiver arrangement according to claim 84, wherein, after passing through said connection, the radio frequency signal is amplified.

Claim 87 (New) The transmitter/receiver arrangement according to claim 84, wherein said receiver circuitry includes a selective band pass filter tuned at the intermediate frequency.

Claim 88 (New) The transmitter/receiver arrangement according to claim 86, wherein said local oscillator signal is derived from a clock circuit of a microprocessor or from a frequency crystal.